

The Higgs Singlet extension parameter space in the light of the LHC discovery

G.M.Pruna, T. Robens, arXiv:1303.1150

- **simple singlet extension**, $V \supset \lambda_1(H^\dagger H)^2 + \lambda_2|\chi|^4 + \lambda_3 H^\dagger H |\chi|^2$
- **bounds**: perturbative unitarity, EW prec data, LHC $\mu(h_{\text{SM}})$,
perturbativity and vacuum stability from RGE running
- $600 \text{ GeV} \leq m_{\text{Heavy Higgs}} \leq 1 \text{ TeV}$
- **results**: $\kappa(\text{SM-like modes}) = \frac{\text{BSM, heavy Higgs}}{\text{SM, heavy Higgs}}, \kappa'(H \rightarrow h h)$

